# North Carolina
# General Aviation Airport Development Plan


## Revised October 2006

# The North Carolina General Aviation Airport Development Plan

## Introduction

In 2004, the North Carolina Department of Transportation, Division of Aviation enacted the *North Carolina General Aviation Airport Development Plan*. The primary focus of this plan is to provide the standards and guidelines used by the Division of Aviation to determine needs that are eligible for federal and state aid and assistance. This plan focuses on publicly owned and operated General Aviation, or GA, airports throughout the state and that are included in FAA's National Plan of Integrated Airport Systems (NPIAS).

The plan emphasizes safety, infrastructure preservation, future development, and promoting economic growth while not losing sight of the needs more unique to the individual airport. Airport Sponsors (Owners) are encouraged to take an annual inventory of their airport using the standards and guidelines as set forth in this plan. The results of this exercise will assist the airport in the development of both short and long term plans to address the needs identified. This list of project needs should also be used as the airport's Transportation Improvement Program (TIP) request.

Once submitted to the Division of Aviation, TIP requests are evaluated individually and also by what each project provides to the statewide airport system. Project selections are made based on priorities as discussed in this plan and available funding, both for the current year and projected years. The Division of Aviation also uses the airports annual TIP requests to seek additional federal and state funds.

## Airport Groupings

The Division of Aviation divided the GA airports in North Carolina into three groups (red, blue, and green). These groups came from an airport ranking model developed by the Division of Aviation using economic development parameters provided by the NC Department of Commerce. These parameters include such factors as: total population, population growth rate, annual per capita income, annual unemployment rate, and tourism revenues versus gross retail sales. After the economic factors were evaluated, filters were created to bridge airports and the economic data. One of the filters used the NPIAS classification to modify an airport group assignment based on their geographic location to other airports included in the NPIAS. Another filter involved staff input relating factors such as: regional impacts, the regions existing and planned transportation system, local industry needs, utility infrastructure, development potential, airspace/geographic/physical constraints, local support, and cost of upgrades.

## Airport Categories

Specifications and recommendations are provided for the airports in each airport grouping for the following categories: planning/design standards, airport zoning, runway approaches, runway safety areas, runway protection zones, existing pavement conditions, runway length, pavement strength, visual navigational aids, runway lighting, weather reporting, standard instrument approaches, taxiway and apron requirements, terminal buildings, taxiway and apron lighting, airfield signage, ground communications, approach lighting, airport rescue and fire fighting equipment, airport maintenance equipment and storage building, and perimeter fencing. If applicable, for each category, Minimum and Recommended goals are set forth for each group.

## TIP Request

Any airport can conduct an inventory based on the guidelines contained in this plan using the category definitions to establish needs. The needs identified, if determined correctly to these guidelines, are then eligible for funding based on priorities and available funds and can be used in their TIP request. The Division of Aviation solicits TIP requests annually), typically in the fall of each year), to develop the future fiscal years funding recommendations. Once finalized, the staff recommendations are then presented to the North Carolina Aeronautics Council for their review and approval and then to the Secretary of Transportation for his approval.

## Conclusion

The purpose of the *North Carolina General Aviation Airport Development Plan* is to identify the deficiencies that our state's GA airports need to address and to then provide a systematic and strategic approach for the Division of Aviation to address these needs. Each airport is encouraged to work through this plan annually. The Division of Aviation has set a goal to bring every airport in each group up to the Minimums listed for each category, followed by bringing each group of airports up to the Recommendations listed for each category.

At any time you have questions or comments about any of the information contained is this plan, please contact us.

**NCDOT – Division of Aviation**
Aviation System Development
1560 Mail Service Center
Raleigh, NC 27699-1560

919-840-0112

http://www.ncdot.org/transit/aviation/

**Mandatory Items**

The Division of Aviation sets forth the following mandatory items for publicly owned and operated airports to be eligible for funding under this plan:

- An approved current Airport Layout Plan (ALP). See the next page entitled, "Airport Layout Plan Requirements," for a complete definition.

- An Airport Height Ordinance to meet Federal Aviation Regulation (FAR) Part 77, established by local ordinance. The ordinance must include the ultimate runway length as depicted on the latest Airport Layout Plan (ALP).

  *It is also highly recommended that each Airport Sponsor establish Land-Use Zoning for your airport.*

- Published current Minimum Operating Standards and Rules and Regulations (accessible to the public) which have been adopted by local ordinance.

- Runway Approach Surfaces must be clear for the primary runway. This includes Visual and the best (lowest minimums) Published Approach Surfaces as defined in FAA AC 150/5300-13, Appendix 2, current revision. It is also recommended that any other runways have, at a minimum, a clear Visual Approach surface 20:1 as defined in FAA AC 150/5300-13, Appendix 2, current revision. The Division of Aviation will participate with Approach Obstruction Projects for runway approach surfaces as outlined above for the first three thousand (3,000) feet from the runway end. (See Airport Development Category Item Number 100. Runway Approach on page 6)

  Note: For airports with a Standard Instrument Approach Procedure (SIAP), FAA Order 8260.3, "Terminal Instrument Procedures," (TERPS) current revision approach surfaces should be maintained clear for the lowest published minimum approach.

- Fully Operational 24 Hour Public Telephone and at least one fully charged fire extinguisher available and easily accessible 24 hours a day for use around the main apron area.

**Note: Secondary and tertiary runways, and related projects are ineligible for funding at this time unless approved otherwise. These projects will be reviewed on a case by case basis only.**

**Airport Layout Plan Requirements**

Red Group
Minimum: An FAA/state approved Airport Layout Plan (ALP) meeting current B-II design standards as defined in FAA AC 150/5300-13 current revision and includes:

- An Identified Area Capable for Future Terminal Area Development
  Identify adequate land in fee simple ownership of the Sponsor for future development of the terminal area (include enough land for future apron needs, taxiways, taxilanes, public and corporate hangar area)

Recommended: An FAA/state approved Airport Layout Plan (ALP) meeting current C-II or appropriate design standards as defined in FAA AC 150/5300-13 current revision.

Blue Group
Minimum: An FAA/state approved Airport Layout Plan (ALP) meeting current B-II design standards as defined in FAA AC 150/5300-13 current revision and includes:

- An Identified Area Capable for Future Terminal Area Development
  Identify adequate land in fee simple ownership of the Sponsor for future development of the terminal area (include enough land for future apron needs, taxiways, taxilanes, public and corporate hangar area)

Green Group
Minimum: An FAA/state approved Airport Layout Plan (ALP) meeting design standards as defined in FAA AC 150/5300-13 current revision.

Recommended: An FAA/state approved Airport Layout Plan (ALP) meeting current B-II design standards as defined in FAA AC 150/5300-13 current revision and includes:

- An Identified Area Capable for Future Terminal Area Development
  Identify adequate land in fee simple ownership of the Sponsor for future development of the terminal area (include enough land for future apron needs, taxiways, taxilanes, public and corporate hangar area)

Note: For a detailed description of the components of an Airport Layout Plan, see Appendix 7 in FAA AC 150/5300-13 current revision. Also, located on the Division of Aviation's Airport Development web page, http://www.ncdot.org/transit/aviation/what/development/, there is a link to FAA Airport's Southern Region Airport Layout Plan (ALP) Checklist.

## Airport Development Categories

The following defines the Airport Development Categories that are being used in the North Carolina General Aviation Airport Development Plan.

NCDOT Division of Aviation sets forth the following categories for airports that are eligible to be addressed by grant funds. The categories are listed in order of priority. In general, a runway approach project (#100) would be addressed before a project to extend the runway (#500).

100. Runway Approach
200. Runway Safety Area (RSA)
300. Runway Protection Zones
400. Pavement Condition
500. Runway Length
600. Pavement Strength
700. Visual Navigational Aids
800. Runway Edge Lighting
900. Weather Reporting Capability
1000. Standard Instrument Approach Procedures (SIAP)
1100. Taxiway Requirements
1200. Aircraft Apron Requirements
1300. Terminal Building
1400. Taxiway and Apron Edge Lighting
1500. Airfield Signage
1600. Ground Communication
1700. Approach Lighting
1800. Aircraft Rescue & Fire Fighting (ARFF) Equipment
1900. Airfield Maintenance Equipment & Storage Building
2000. Perimeter Fencing

## Airport Development Categories - Definitions

### 100. Runway Approach

All Groups

Required: Airport must maintain clear, for the primary runway, the most restrictive threshold siting surface for each runway end as defined in FAA AC 150/5300-13, Appendix 2, current revision. The surfaces should be selected based on aircraft operations currently conducted to that runway and the established landing visibility minimums and types of instrumentation available for that runway.

It is recommended that airports with secondary and tertiary runways also meet this requirement.

The Division of Aviation will participate with Approach Obstruction Removal Projects for threshold siting surfaces as outlined above for the first three thousand (3000) feet from the runway end.

Notes:
1. Approach Obstruction Removal Projects will only be funded for the part of this surface that has not been previously funded.

2. Approach Obstruction Removal Projects for secondary and tertiary runways are ineligible for funding at this time.

3. For airports with a Standard Instrument Approach Procedure (SIAP), FAA Order 8260.3, "Terminal Instrument Procedures," (TERPS) current revision approach surfaces should be maintained clear for the lowest published minimum approach.

### 200. Runway Safety Area (RSA)

All Groups

Minimum: The Runway Safety Area should meet the current requirements as listed in FAA AC 150/5300-13 latest revision, for the current Airport Reference Code (ARC) or an approved Runway Safety Area Determination.

Note:
As the ARC for the airport increases the Runway Safety Area should be adjusted accordingly and meet the new dimensions as listed in FAA AC 150/5300-13 current revision.

## 300. Runway Protection Zones

All Groups

Minimum: Easement/Control to meet the guidelines of the Runway Protection Zones as listed in FAA AC 150/5300-13 latest revision, for the current Visual or Standard Instrument Approach Procedure (SIAP).

Recommended: Fee simple ownership of the Runway Protection Zones as listed in FAA AC 150/5300-13 latest revision, for the current Visual or Standard Instrument Approach Procedure (SIAP).

## 400. Pavement Condition

The Division of Aviation maintains a statewide Pavement Management System (PMS) for all publicly owned and operated General Aviation (GA) airports. The PMS uses the Pavement Condition Index (PCI) method to evaluate the pavement conditions at GA airports that are eligible for state and/or federal funding. The PCI method is an objective system using visual inspection data to assign a numerical value to a section of pavement based on its current condition. The values range from 100 to zero, with 100 being a pavement section in perfect condition to zero being a totally failed pavement. NCDOT personnel perform these inspections at least every three years.

All Groups

Minimum: All primary pavement sections, as defined in the PMS, should have a PCI number greater than 54.

Recommended: All primary pavement sections, as defined in the PMS, should have a PCI number greater than 75.

Pavement Projects

In order for an airport pavement section to be eligible for funds under the category of Pavement Condition, the pavement section must have a PCI less than or equal to 75. In some cases, minor preventative maintenance may be performed on pavement sections where the PCI is greater than 75.

See the table on the next page for a general guideline of repair methods based on PCI.

The Division of Aviation will determine, on a case by case basis, the pavement repair method employed based on the following guidelines for existing public runways, taxiways, and apron areas:

| PCI | Maintenance Method | Comments |
|---|---|---|
| < 55 | Repair and rehabilitation of pavement section (partial and full depth patching, overlay, and surface treatments). | Repair or rehabilitation will be based on, but not limited to, pavement use, existing pavement distresses, age of pavement, and costs of repair/rehab options. |
| ≤ 75 | Preventative Maintenance (includes crack and joint sealing, surface treatments, and sealcoats). | Preventative maintenance will be based on, but not limited to, pavement use, existing pavement distresses, age of pavement, and costs of maintenance options. |
| >75 | No Action necessary. | In some cases, minor preventative maintenance may be performed. |

Notes:
Airside pavement areas excluded are secondary and tertiary runways and associated taxiways.

T-hangar taxiways, corporate taxiways and other associated areas will be considered for eligibility on a case by case basis.

Runway Pavement Markings

As a part of the PCI inspections, NCDOT inspects and evaluates the existing runway pavement marking condition for each airport. The markings are assigned a rating of excellent, good, fair, or poor.

All Groups

Minimum: Runway pavement marking condition should be fair or better.

Recommended: Runway pavement marking condition should be good or better.

The Division of Aviation determines, on a case by case basis, each airport eligible for remarking based on its latest rating and upcoming pavement projects.

Remark, upgrade, or installation of new airfield markings should be per FAA AC 150/5340, current revision.

## 500. Runway Length and Width

Red Group

Runway Length:
Minimum: 5000 feet paved

Recommended: 6500 feet paved

Maximum: Determined on a case by case based on proven demand

Runway Width:
Minimum: 75 feet paved

Recommended: 100 feet paved

Blue Group

Runway Length:
Minimum: 4200 feet paved

Recommended: 5500 feet paved

Maximum: Determined on a case by case based on proven demand

Runway Width:
Minimum: 75 feet paved

Recommended: 100 feet paved

Green Group

Runway Length:
Minimum: Existing conditions or based on design aircraft and FAA AC 150/5325-4A, "Runway Length Requirement for Airport Design" current revision.

Recommended: 5000 feet paved

Runway Width:
Minimum: 60 feet paved

Recommended: 75 feet paved

**600. Pavement Strength**

Red Group

Minimum: 12,500 lb. Single Wheel (SW) for all airside pavements.

Recommended: Up to 60,000 lb. Dual Wheel (DW) for all airside pavements.

Maximum: Determined case by case based on proven demand.

Blue Group

Minimum: 12,500 lb. SW for all airside pavements.

Recommended: Up to 30,000 lb. DW for all airside pavements.

Maximum: Determined case by case based on proven demand.

Green Group

Minimum: 12,500 lb. SW for all airside pavements.

Maximum: Determined case by case based on proven demand.

Notes:
Pavement areas excluded are secondary and tertiary runways.

T-hangar taxiways, corporate taxiways and other associated areas will be considered for eligibility on a case by case basis.

**700. Visual Navigational Aids**

Red and Blue Groups

Minimum: Rotating Beacon

Lighted Windsock with Segmented Circle

Two Box Precision Approach Path Indicator (PAPI) Lights on both ends of Primary Runway

Optional: Runway End Identifier Lights (REIL) on runway ends with a SIAP

Green Group

Minimum: Windsock with Segmented Circle

Recommended: If runway has lighting:

Rotating Beacon

Lighted Windsock

Two Box Precision Approach Path Indicator (PAPI) Lights on both ends of Primary Runway

Optional: Runway End Identifier Lights (REIL) on runway ends with a SIAP

## 800. Runway Edge Lighting

Red Group

Minimum: Medium Intensity Lights

Recommended: High Intensity

Blue Group

Minimum: Medium Intensity Lights

Green Group

Minimum: N/A

Recommended: Medium Intensity Lights

## 900. Weather Reporting Capability

Red Group

Minimum: Continuous certified and automated weather reporting to include ceiling and visibility (AWOS-III or better)

Blue and Green Groups

Minimum: Certified Altimeters if airport is attended.

Recommended: Continuous certified and automated weather reporting to include ceiling and visibility (AWOS-III or better)

**1000. Standard Instrument Approach Procedures (SIAP)**

Red Group

Minimum: Non-Precision

Recommended: Precision - Category I – 200 feet and ½ mile visibility

Blue Group

Minimum: Non-Precision

Recommended: Precision - Category I – 200 feet and 3/4 mile visibility

Green Group

Minimum: N/A (Refer to Item # 100 - Runway Approach)

Recommended: Non-Precision

Note: For airports with a Standard Instrument Approach Procedure (SIAP), FAA Order 8260.3, "Terminal Instrument Procedures," (TERPS) current revision approach surfaces should be maintained clear for the lowest published minimum approach.

**1100. Taxiway Requirements**

Red Group

Recommended: Full parallel taxiway meeting FAA approach and design standards.*

Blue Group

Minimum: Turnarounds at each end of the airport's primary runway.

Recommended: Full parallel taxiway meeting FAA approach and design standards.*

Green Group

Minimum: Turnarounds at each end of the airport's primary runway.

*At airports with at least 20,000 annual itinerant operations and/or with landing minimums less than 1 statute-mile visibility and/or less than 400 feet decision height.

## 1200. Aircraft Apron Requirements

Red Group

Minimum: A paved aircraft parking area capable of parking twenty-five based aircraft and five itinerant aircraft. Of these thirty aircraft, allotment for three multi-engine aircraft is required. Tie-downs should be provided for all parking spaces. Spacing between aircraft and for taxilanes should meet FAA guidelines. Pavement strength for the itinerant parking area should match the pavement strength of the runway.

Blue Group

Minimum: A paved aircraft parking area capable of parking fifteen based aircraft and five itinerant aircraft. Of these twenty aircraft, allotment for two multi-engine aircraft is required. Tie-downs should be provided for all parking spaces. Spacing between aircraft and for taxilanes should meet FAA guidelines. Pavement strength for the itinerant parking area should match the pavement strength of the runway.

Green Group

Minimum: A paved aircraft parking area capable of parking ten based aircraft and five itinerant aircraft. Of these fifteen aircraft, allotment for one multi-engine aircraft is required. Tie-downs should be provided for all parking spaces. Spacing between aircraft and for taxilanes should meet FAA guidelines. Pavement strength for the itinerant parking area should match the pavement strength of the runway.

Apron Expansion Criteria: (All Groups)
An existing aircraft parking apron will not be expanded unless the airport can document that the existing ramp is at least 75% occupied with airworthy aircraft and/or there is a documented change in the size and/or type of transient aircraft that justifies an expansion. (Transient area needs to have room for three large corporate jets that use the field 8 times a month). Any deviations to this requirement will be based on a case by case basis.

## 1300. Terminal Building

All Groups

Minimum to include:
- Designated FBO /Operational area
- Designated flight planning area
- Public meeting room
- Public restrooms

Recommended: Up to 3,200 square feet (state participation based on current square footage rate for commercial building, square foot rate and participation percentage reevaluated annually). This includes all utility tie-ins. Additional space at sponsors costs.

Building may include general office space, a lobby area, and a pilot's lounge.

Funding eligibility can be granted for first time new building construction and existing buildings that have exceeded a 15 year time period since the new construction/renovation. Buildings constructed within the 0 to 15 year time frame are not eligible for funding.

Terminal access road and non-revenue public parking (not to exceed 20 spaces) will have the same priority as the terminal building but funding not included in the terminal building cost.

## 1400. Taxiway and Apron Edge Lighting

Red Group

Minimum: Medium Intensity Lights

Blue and Green Groups

Minimum: Reflective marking or markers

Recommended: Medium Intensity Lights

**1500. Airfield Signage:**

Red Group

Minimum: Runway holding position, location, and guidance signs.

Lighted signs approved on a case by case basis.

Blue Group

Minimum: Runway holding position signs.

Recommended: Location and guidance signs.

Lighted signs approved on a case by case basis.

Green Group

Minimum: N/A

Recommended: Runway holding position signs. (Required if runway has an ILS)

Location and guidance signs are approved on a case by case basis.

## 1600. Ground Communication

Red and Blue Groups

Minimum: UNICOM, and a Remote Communication Outlet (RCO) or Ground Communication Outlet (GCO)

Green Group

Minimum: UNICOM (if attended)

Recommended: Remote Communication Outlet (RCO) or Ground Communication Outlet (GCO)

## 1700. Approach Lighting

Red Group

Minimum: N/A

Recommended: Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR). Other systems will be considered on a case by case basis.

Blue and Green Groups

Minimum: N/A

All approach lighting systems will be considered on a case by case basis.

## 1800. Aircraft Rescue & Fire Fighting (ARFF) Equipment

All Groups

The Division will, on a case by case basis, consider participation of a skid-mounted type of fire suppression equipment and all necessary appurtenances and associated turn out gear. The airport must certify to the Division that adequate annual training for the equipment use and aviation fire fighting techniques occur at a FAA approved school/course.

## 1900. Airfield Maintenance Equipment & Storage Building

All Groups

Airfield maintenance equipment (approved tractor and attachments) and an approved building to store equipment. Request considered every ten years.

## 2000. Perimeter Fencing

All Groups

Recommended per FAA specification.

# NC Airports per Airport Development Plan Group

(72 Publicly Owned and Operated Airports)